COPY

Atty. Docket No.: 2846/1002 **PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:	Hoveyda et al.	Examiner:	Choi, Ling Su
Patent No.:	6,921,735		
Issued:	July 26, 2005	Group Art Unit:	1713
Entitled:	Recyclable Metathesis Catalysts		
Serial No.:	09/925,555	Conf. No.:	5529
Filed:	August 9, 2001		

CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8a

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David J. Dykeman
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TRANSMITTAL LETTER

Enclosed for filing the above-identified patent application, please find the following documents:

1. Request for Certificate of Correction;
2. Copy of Amendment previously filed on December 21, 2004; and
3. Return Postcard.

The Commissioner for Patents is hereby authorized to charge any fees to Deposit Account No. 16-0085, Reference 2846/1002. A duplicate of this transmittal letter is enclosed for this purpose.

Respectfully submitted,

Date: August 5, 2005

Name: David J. Dykeman
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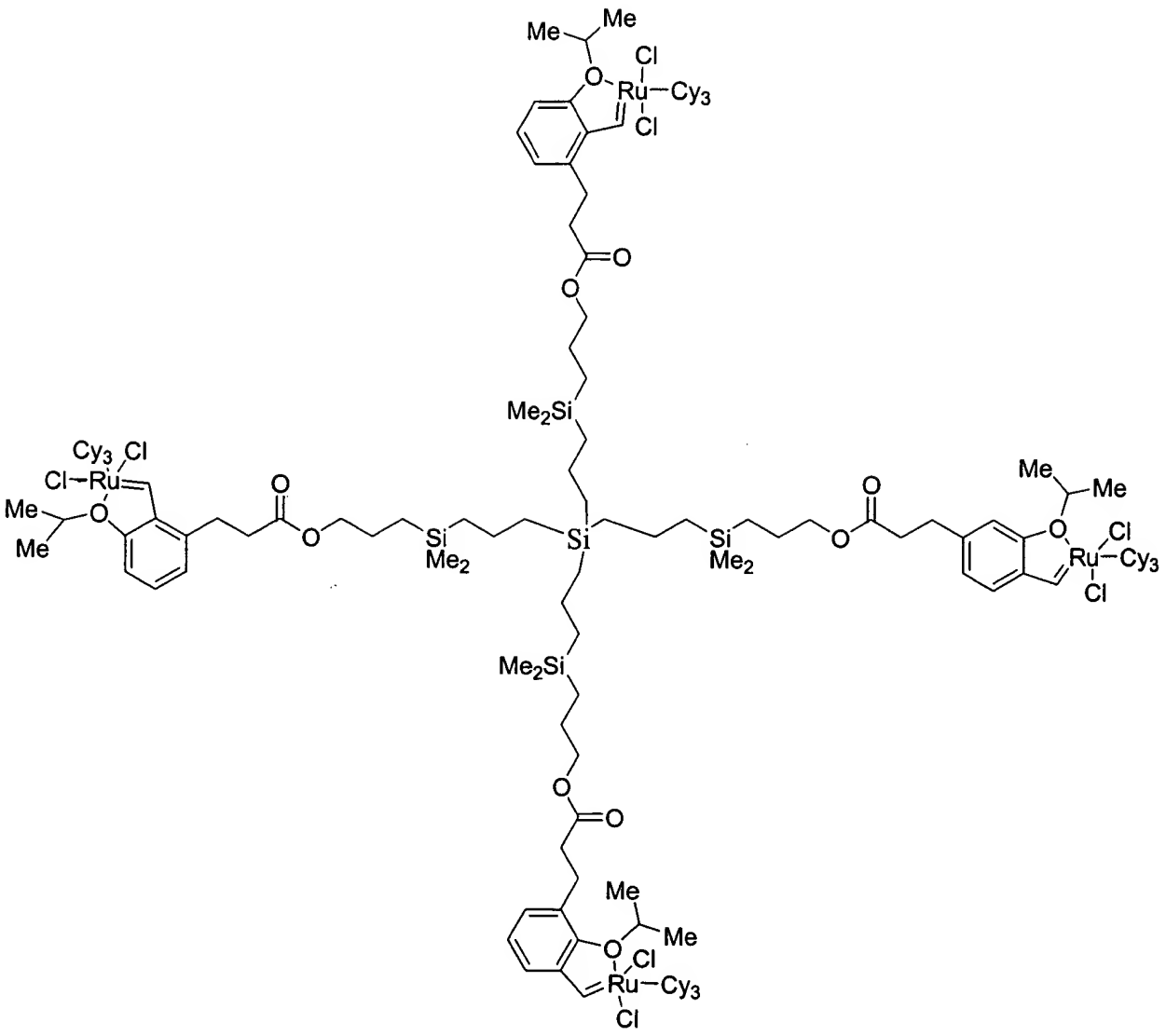
P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR CERTIFICATE OF CORRECTION

Sir:

Applicants request issuance of a Certificate of Correction for U.S. Patent No. 6,921,735.

Applicants have identified an error in claim 28 that requires correction. The chemical structure is disconnected between Si and Me_2Si. Please connect the structure so there is a continuous line between Si and Me_2Si. The next page contains a copy of the correct chemical structure in the Amendment filed December 21, 2004. For your reference, enclosed is a copy of the Amendment filed on December 21, 2004 which also shows the correct structure for claim 28.


Me
Me
Cl
O
Ru
Cy3
Cl
O
O
Me2Si
Cy3
Cl
Cl
Ru
Me
O
Me
O
O
Si
Me2
Si
Si
Me2
O
O
Me
Me
O
Cl
Ru
Cy3
Cl
Me2Si
O
O
Me
Me
O
Cl
Ru
Cy3
Cl

Applicants respectfully request a correction of the patent in your proper manner and issuance of a Certificate of Correction.

Applicants believe that no fee is due with this filing; however, please charge any necessary fees required in connection with the paper transmitted herewith to Deposit Account No. 16-0085, Reference No.: 2846/1002.

Please contact the undersigned Attorney of record with any questions.

Respectfully submitted,

Date: August 5, 2005

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Palmer & Dodge LLP
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Boston, MA 02199-7613
Tel: 617-239-0100

Atty. Docket No.: 2846/1002 **PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:	Hoveyda et al.	Examiner:	Ling-Siu Choi
Serial No.:	09/925,555		
Filed:	August 9, 2001	Group Art Unit:	1713
Titled:	Recyclable Metathesis Catalysts		
		Conf. No.:	5529

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Melissa Powers
Name of Person Mailing Paper

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Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
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AMENDMENT AND REPLY

Sir:

This Amendment is being filed in response to the Office Action mailed from the U.S. Patent and Trademark Office on September 22, 2004 in the above-identified application. Reconsideration is requested.

Amendments to the Claims are shown in the "Listing of the Claims" which begins on page 2 of this paper.

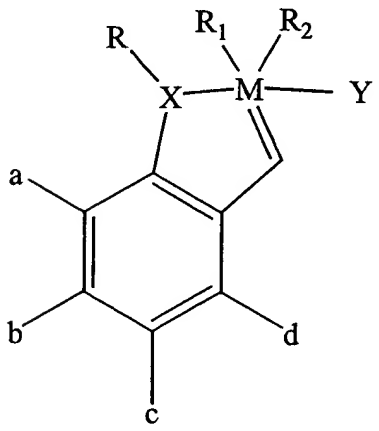
Remarks begin on page 10 of this paper.

Please enter the following amendments and remarks.

LISTING OF THE CLAIMS

The following listing of the claims will replace all prior versions and all prior listings of the claims in the present application.

1. (Previously Presented) A composition comprising a transition metal catalyst having the following structure:



wherein:

M comprises a transition metal;

R comprises an alkyl, alkenyl, alkynyl, aryl, alkoxy, alkenyloxy, alkynyloxy, aryloxy, alkoxy carbonyl, alkylamino, alkylthio, alkylsulfonyl, alkylsulfinyl; each optionally substituted with an alkyl, halogen, alkoxy, aryl or heteroaryl moiety;

R_1 and R_2 each comprises or together comprise, an electron withdrawing anionic ligand;

a, b, c, and d each comprise H, a halogen atom or an alkyl, alkenyl, alkynyl, aryl, alkoxy, alkenyloxy, alkynyloxy, aryloxy, alkoxycarbonyl, alkylamino, alkylthio, alkylsulfonyl; alkylsulfinyl; each optionally substituted with an alkyl, halogen, aryl or heteroaryl moiety;

X is oxygen, sulfur, nitrogen or phosphorus; and

Y comprises an electron-donating heterocyclic carbene ligand.

2. (Previously Presented) The composition of claim 1 wherein M is Ru.

3. (Previously Presented) The composition of claim 1 wherein X is O.

4. (Previously Presented) The composition of claim 1 wherein R is a lower alkyl group.

5. (Previously Presented) The composition of claim 4 wherein R is isopropyl.

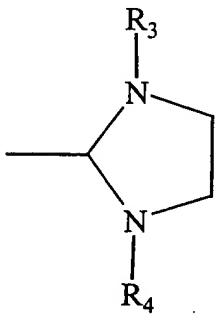
6. (Previously Presented) The composition of claim 1 wherein R_1 and R_2 each is a halogen.

7. (Previously Presented) The composition of claim 6 wherein R_1 and R_2 each is Cl.

8. (Previously Presented) The composition of claim 1 wherein a, b, c, and d each comprises H or a lower alkyl group.

9. (Previously Presented) The composition of claim 1 wherein Y comprises a 4,5-dihydroimidazol-2-ylidene.

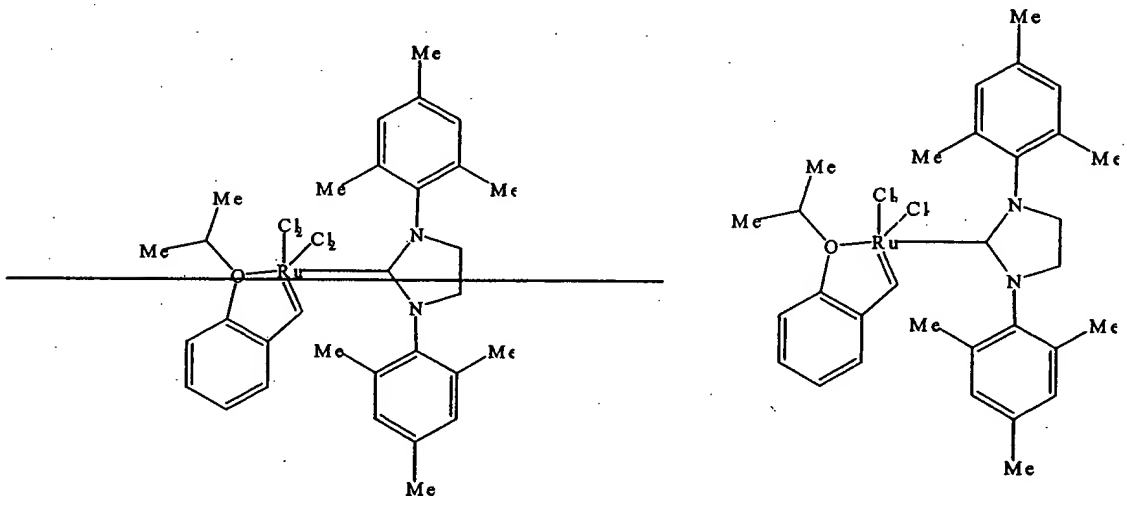
10. (Previously Presented) The composition of claim 9 wherein Y comprises a tricyclic aromatic ring structure having the following structure:



wherein R_3 and R_4 each comprises an aromatic ring moiety.

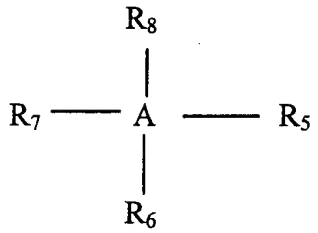
11. (Previously Presented) The composition of claim 10 wherein R_3 and R_4 both comprise 2,4,6-trimethylphenyl (mesityl) moieties.

12. (Currently Amended) The composition of claim 1 comprising the following structure:



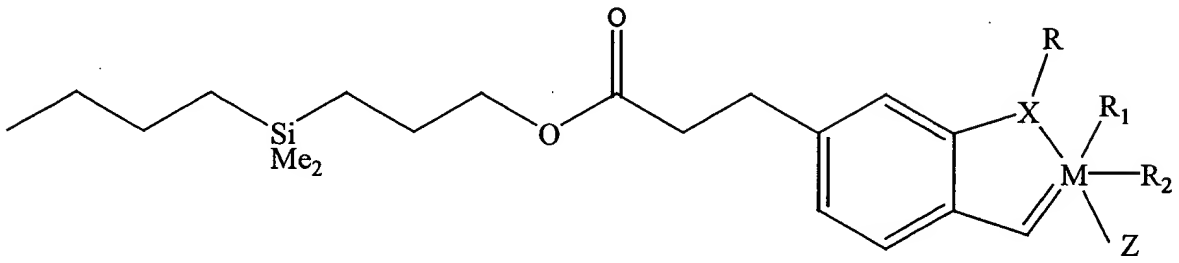
13. (Previously Presented) A composition of claim 1 wherein the transition metal catalyst is part of a dendrimer compound.

14. (Previously Presented) The transition metal catalyst of claim 13 having the follwing structure:



wherein A is a polyvalent atom selected from the group consisting of carbon, nitrogen, silicon and phosphorous;

R_5, R_6, R_7 and R_8 each comprises the following structure:



wherein:

M comprises a transition metal;

X comprises O, S, N or P;

R comprises an alkyl, alkenyl, alkynyl, aryl, alkoxy, alkenyloxy, alkynyloxy, aryloxy, alkoxy carbonyl, alkylamino, alkylthio, alkylsulfonyl, alkylsulfinyl; each optionally submitted with an alkyl, halogen, aryl or heteroaryl moiety;

R_1 and R_2 each comprises, or together comprise, an electron withdrawing group; and

Z comprises Y or a phosphine group.

15. (Previously Presented) The composition of claim 14 wherein A is silicon.

16. (Previously Presented) The composition of claim 14 wherein M is a transition metal selected from the group consisting of ruthenium, osmium and tungsten.

17. (Previously Presented) The composition of claim 14 wherein M is ruthenium.

18. (Previously Presented) The composition of claim 14 wherein X is O.

19. (Previously Presented) The composition of claim 14 wherein R is a lower alkyl group.

20. (Previously Presented) The composition of claim 19 wherein R is isopropyl.

21. (Previously Presented) The composition of claim 14 wherein R_1 and R_2 each is a halogen.

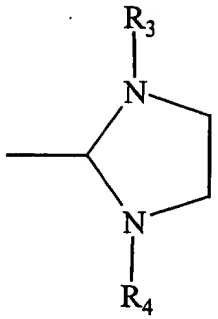
22. (Previously Presented) The composition of claim 21 wherein R_1 and R_2 each is Cl.

23. (Previously Presented) The composition of claim 14 wherein Z comprises a phosphine moiety having the formula $P(Cy)_3$.

24. (Previously Presented) The composition of claim 23 wherein Cy comprises an aliphatic ring structure.

25. (Previously Presented) The composition of claim 23 wherein Cy comprises a cyclohexyl or cyclopentyl group.

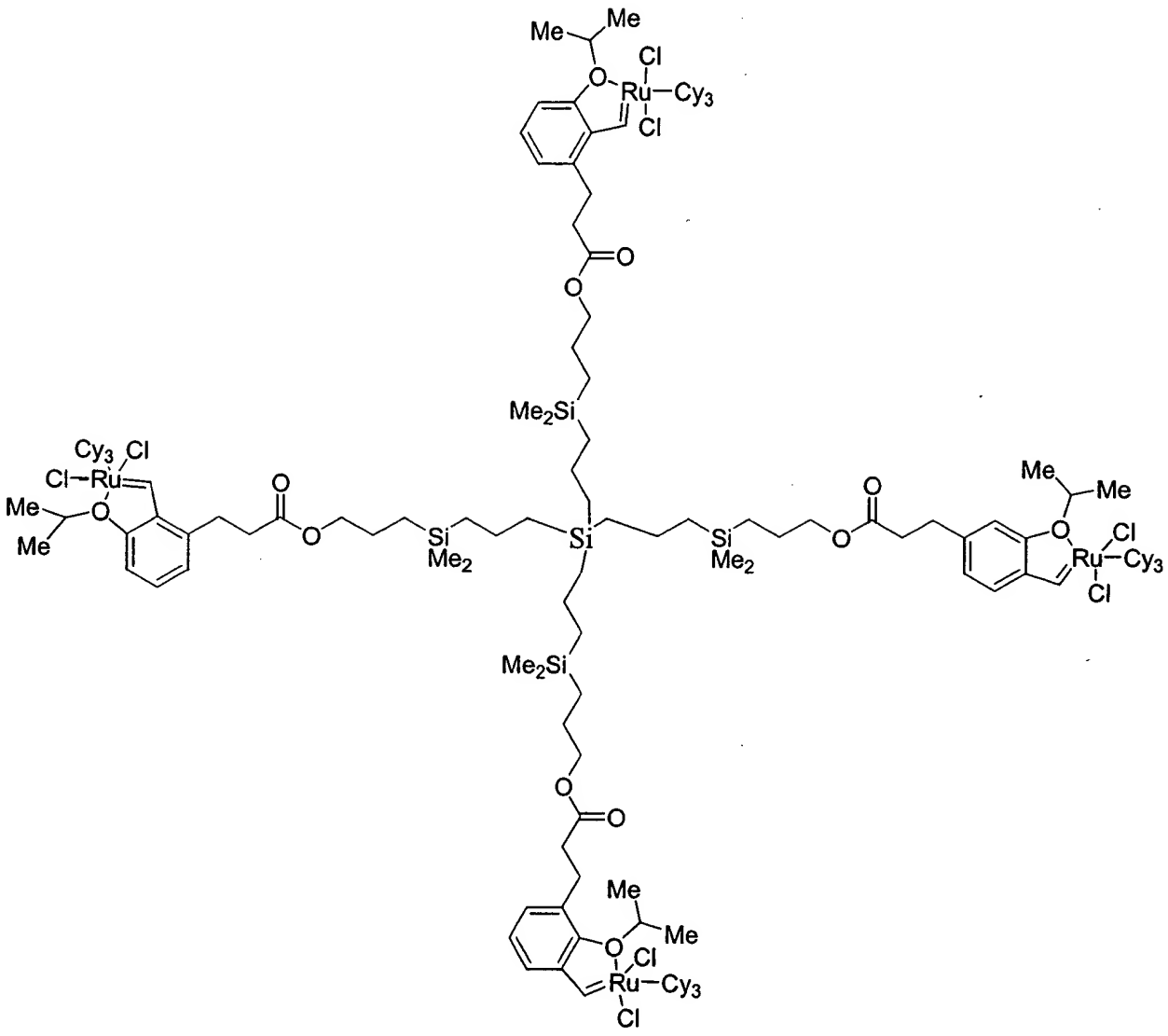
26. (Previously Presented) The composition of claim 14 wherein Z comprises an aromatic ring structure having the following structure:



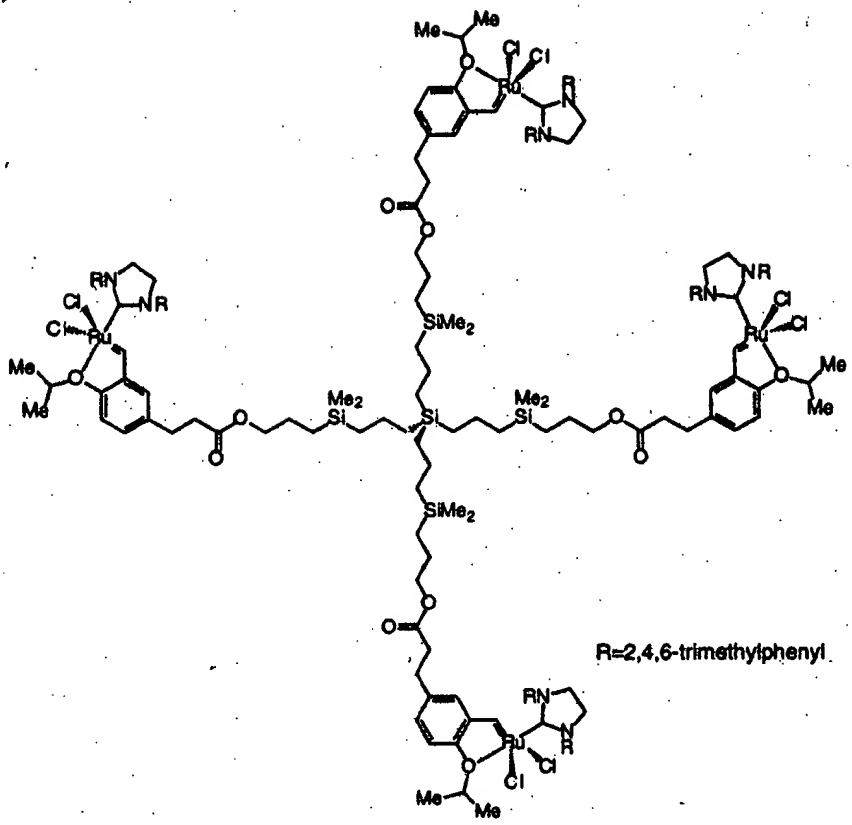
wherein: R_3 and R_4 each comprises an aromatic ring moiety.

27. (Previously Presented) The composition of claim 26 wherein R_3 and R_4 each comprises 2, 4, 6-trimethylphenyl (mesityl).

28. (Previously Presented) The composition of claim 14 comprising the following structures:



or



29–48. (Canceled).

REMARKS

Upon entry of this amendment, claims 1-28 are pending. Claim 12 has been amended to merely correct a typograhical error in the structure. Support for this correction can be found in Figure 2 and structures 2 and 2a in Figure 3 in the specification. Claims 29-48 were withdrawn and have been canceled without prejudice for the reasons set forth below. No new matter has been added.

Applicants note that in item 10 on page 5 of the Office Action, the Examiner has indicated that claims 9-28 would be allowable if rewritten in independent form.

I. Restriction Requirement

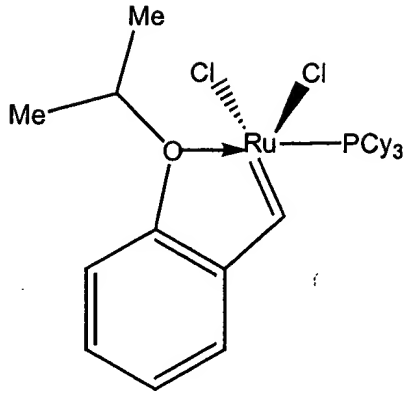
Applicants hereby affirm the election with traverse, as requested in the Office Action, to prosecute the invention of **Group I, claims 1-28**. Claims 29-48 have been withdrawn by the Examiner as directed to a non-elected invention. In the interest of furthering prosecution of the instant application, Applicants have canceled claims 29-48 without prejudice. The cancellation of the non-elected claims should not be construed as a surrender of any subject matter. Applicants reserve the right to prosecute claims 29-48 in a divisional application.

II. Claim Rejections Under 35 U.S.C. § 102(b)

Claims 1-8 were rejected under 35 U.S.C. §102(b) as anticipated by Kingsbury et al. (J. Am. Chem. Soc., **121**, 791-799(1999)). Applicants respectfully traverse this rejection.

Applicants note that the Kingsbury et al reference was submitted by Applicants with the Information Disclosure Statement of March 13, 2002. Applicants disclose this reference on page 2, lines 3-4 and 7-11 of the specification of the present application.

Kingsbury et al. is drawn to a ruthenium-based metathesis catalyst having an internal metal-oxygen chelate. The Examiner cites the following compound disclosed in Kingsbury et al. and argues that it anticipates claims 1-8.



This compound is identical to the metal chelate structure depicted in Figure 1 of the present application and described to be a prior art compound in the specification on page 7, lines 20-21. The PCy_3 substituent in that compound is a tricycloalkylphosphine group. The Y substituent defined in claim 1 is distinctly different from the PCy_3 group disclosed in Kingsbury et al.

Y is explicitly defined in claim 1 to be an *electron-donating heterocyclic carbene ligand.* The corresponding susbstituent for Y in Kingsbury et al. is PCy_3. **PCy_3 is not an electron-donating heterocyclic carbene ligand.**

PCy_3 is a phosphine moiety having a phosphorous atom linked to a cycloalkyl structure, such as cyclohexyl. (See specification, page 10, lines 21-22 and Figure 1) PCy_3 is not a carbene ligand. In an example in the present application, Formula **5**, a compound of the invention, was formed by replacing the PCy_3 ligand of Formula **3** with an imidazolin-2-ylidene system carbene ligand. (See specification, Equation 1 on page 9; Example 5 on page 35) The specification (page 10, lines 15-22; page 12, lines 2-8) compares the proton-NMR of the compound of formula **5** with the prior art compound disclosed in Kingsbury et al. The specification distinguishes the compounds by stating that some of the differential structural attributes between the compounds "may be attributed to [the] higher electron density at the transition metal center of Formula 5, *caused by the stronger electron donation by the heterocyclic ligand* ... [as] *compared to* PCy_3 (Cy is an aliphatic cycloalkyl moiety, preferably cyclohexyl)." [emphasis added]

It is well established that, in order to anticipate a claim, the prior art reference must teach each and every limitation of the claim. Independent claim 1 requires Y to be an electron-donating heterocyclic carbene ligand. The corresponding ligand to Y in the compound disclosed in Kingsbury et al. is PCy_3 (tricycloalkyl phosphine). PCy_3 is neither a heterocyclic ligand nor a carbene ligand. Thus, Kingsbury et al. does not teach (or suggest) the electron-donating heterocyclic carbene ligand of the compound of claim 1.

Therefore, claims 1-8 are not anticipated by the disclosure of Kingsbury et al. and the instant rejection should be withdrawn.

Claims 1-8 are rejected under 35 U.S.C. §102(b) as being anticipated by Harrity et al. (J. Am. Chem. Soc., **120**, 2343-2351(1998)). Applicants respectfully traverse this rejection.

As was the case with the Kingsbury et al. reference discussed above, the Harrity et al reference was submitted by Applicants with the Information Disclosure Statement of March 13, 2002. Harrity et al. was disclosed by Applicants on page 2, lines 6-7 of the specification of the present application.

Harrity et al. is drawn to chromenes formed by metal-catalyzed reactions. The Examiner cites a metal complex compound from Harrity et al. and argues that Harrity et al. anticipates claims 1-8. However, the compound cited by the Examiner in the instant rejection is the identical compound cited in the rejection over Kingsbury et al. Thus, all the above arguments regarding the rejection over Kingsbury et al. apply equally to the instant rejection over Harrity et al.

As discussed previously with respect to Kingsbury et al., claim 1 explicitly requires the Y substituent to be an electron-donating heterocyclic carbene ligand. The corresponding susbstituent in the compound disclosed in Harrity et al. is PCy_3. **PCy_3 is not an electron-donating heterocyclic carbene ligand.**

It is well established that, in order to anticipate a claim, the prior art reference must teach each and every limitation of the claim. Harrity et al. does not teach (or suggest) the electron-donating heterocyclic carbene ligand limitation of claim 1. Thus, Harrity et al. does not anticipate claims 1-8 of the present application and the instant rejection should be withdrawn.

Accordingly, claims 1-8 are not anticipated by the disclosures of Kingsbury et al. or Harrity et al.

Applicant submits that all claims are allowable as written and respectfully request early favorable action by the Examiner. If the Examiner believes that a telephone conversation with Applicant's attorney/agent would expedite prosecution of this application, the Examiner is cordially invited to call the undersigned attorney/agent of record.

Respectfully submitted,

Date: December 21, 2004

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